

| Main theme | Sub - Theme | Code Number |
|----------------------------------|--|-------------|
| Natural Resources | Water | 9 |
| Study Name | Assessing Runoff Potential for Water Harvesting Generation in Jordan | |
| Author | Jarrah Mahmood Ahmed | |
| Date of Study | 2005 | |
| Objectives | <p>Assessing runoff potential in a hyper arid area is the main concern of this study. There are many factors affecting the runoff behavior such as rainfall intensity, evaporation, infiltration, interception, rock size, kinetic energy of rainfall, wind, slope and crust. The number and complexity of intervening variables creates demanding experimental work in terms of time, effort and logistics. A portable drop former mobile rainfall simulator with 2 meters height was used. Detailed calibrations were carried out on the simulator board. Attention was paid to the issue of the spatial variability of rainfall, drop size and distribution. The work was carried out in three main sites, Hassan, Baqaweah and Sweaid in northeast part of Jordan called Badia.</p> | |
| Output and Recommendation | <p>The results of this research revealed that four main outcomes can be predicted from rainfall simulations that are medium to high intensity rainfall generates 79% to 91% of precipitation as runoff; low intensity storms still generate 59% to 84% of the storm as local runoff. These values are very high and reveal the tremendous potential for water harvesting if the water can be collected locally. Losses through runoff are high such as seepages and evaporation which increase with catchment size. Runoff needs to be collected within small scale catchments as practiced by Bedouins by using the Mahafir technique. It is recommended that any new developments should be based upon the insights provided by this research to deepen the existing reservoirs of the old Mahafir to reduce evaporation loss amounts and to maximize collections.</p> | |
| Development Aspects | <p>In terms of development, common characteristics of water harvesting include:</p> <p>A catchment area: this is the area, which supplies the runoff to the cropped or run-on area. Water harvesting is particularly well suited to arid and semi-arid lands that it facilitates taking maximum advantage of rainfall. The ephemeral nature of water input in arid and semi-arid lands and the high rates of evaporation. Water harvesting systems involve small engineering works and do not need too much capital to establish. Water harvesting systems often harvest soil (sediment) as well. It depends on the characteristics of the crust. Slope of the runoff area and the volume of water (rainfall).</p> | |
| Remarks | <p>Thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Humanities, School of environment and Development.</p> <p>https://www.proquest.com/openview/1f407474acf8f2a31fc0014004599be6/1?pq-diss=y&cbl=2026366&origsite=gscholar</p> | |

